

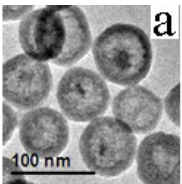
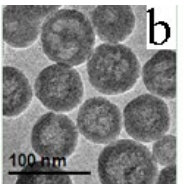
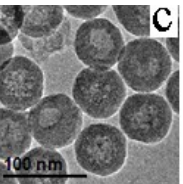
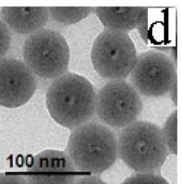
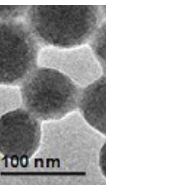
Supporting Information

Highly Sensitive Detecting Copper Ion by Densely Grafting Fluorescein inside the Polyethyleneimine Core-Silica Shell Nanoparticles

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Tab. S1 TEM image of SPNPs with different Hydrolysis time

hydrolysis time (h)	6	12	18	24	30
TEM image					

Tab. S2 Linear equations of the FSPNPs response to Cu²⁺ in 10 mM pH 9.0
Na₂CO₃-NaHCO₃ buffer

concn range of Cu ²⁺ /M	linear equation	R
$1.0 \times 10^{-10} \sim 1.0 \times 10^{-9}$	$y = 4.304 \times 10^8 x + 1.065$	0.9990
$1.0 \times 10^{-9} \sim 1.0 \times 10^{-8}$	$y = 2.734 \times 10^8 x + 1.231$	0.9893

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Tab. S3 Detection of Cu²⁺ in HCT-116 colorectal cancer cells samples and in tap-water samples

sample	Cu ²⁺ added (nM)	Cu ²⁺ detected (nM)	recovery (%)
(a)	5.0	4.9	98
	7.0	6.8	97
(b)	0	0.62	
	0.10	0.74	103
	0.30	0.87	95

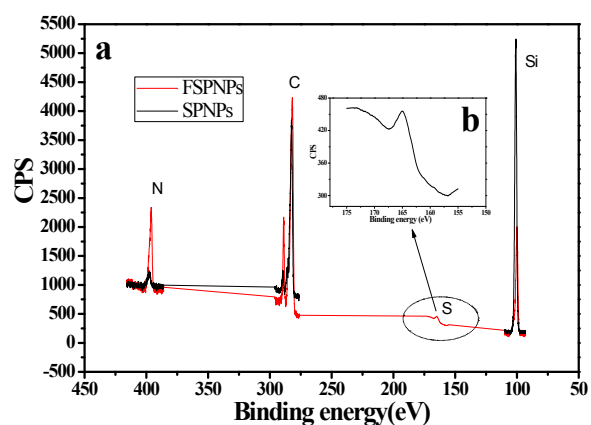


Fig. S1 (a) XPS of C, Si, N and S elements of SPNPs (black) and FSPNPs (red). (b) XPS of S element of FSPNPs.

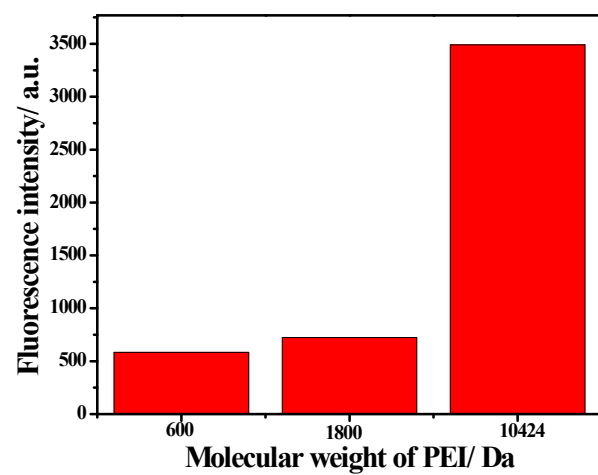


Fig. S2 Effect of the molecular weight of PEI on the loading density of FITC on silica nanoparticles. The concentration of PEI was 0.1g/mL.

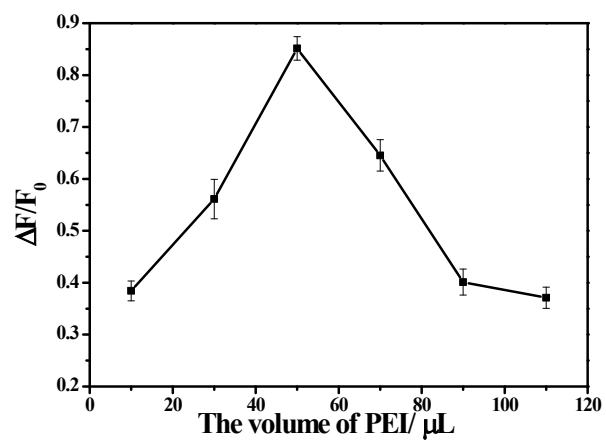


Fig. S3 Effect of the dosage of PEI on the Cu^{2+} (10^{-6} M) quenching efficiency. The concentration of PEI was 0.1g/mL.